

CYRIL MAUFFREY

<https://doi.org/10.71165/gtyi-4qw3>

SUMMARY

Cyril Mauffrey's trajectory from Marseille to Denver Health reflects a relentless pursuit of surgical mastery across three continents. After navigating medical systems in Italy and the United Kingdom, he established a leading trauma center in Colorado. His clinical focus centers on complex pelvic and acetabular reconstructions, refining protocols for geriatric fractures and hemorrhage control. As Editor-in-Chief of EJOST, Mauffrey prioritizes international knowledge transfer, mentoring global fellows while preparing for a future dedicated to nomadic surgical education in Southeast Asia.



From Marseille to Denver, by way of Hong Kong, Turin, and Birmingham, Cyril Mauffrey exemplifies excellence in international orthopedic trauma surgery. As Department Chair at Denver Health, this multilingual surgeon leads a team of 22 practitioners, trains fellows from around the world, and maintains an intensive research program. As Editor-in-Chief of EJOST and tireless globe-trotter, he works to build bridges between Europe and the United States, while developing innovative approaches in the treatment of pelvic fractures.

Cyril Mauffrey, what are your roots?

I'm actually a blend of two origins: half from Marseille, half from the Vosges region. My mother is from Marseille, and that's where I was born. My father comes from the Vosges, specifically from a tiny village called Rupt sur Moselle. I spent my early years in Marseille, which is why I consider myself a Marseillais. I am a Marseillais at heart, completely.

So you grew up in Marseille?

In reality, I only lived there for four years. I was born in 1975, and in 1980, we moved to Singapore. It was an exciting time for Southeast Asia. Singapore was beginning to develop as a major port, import-export was booming, and it was the beginning of the technological era in the region.

My father, who was at the time a welder in the Marseille shipyards, seized an interesting opportunity. He embellished his CV a bit by claiming he spoke English and sent it to his boss. He was then offered the chance to open a small office there. That's how in 1980, we left for Singapore: my brother, my parents, and me.

We stayed there for 5 years. I completed all my primary education there, in the French system. It was a period when French schools abroad were increasingly developing.

After this stay, our journey included several stops. We first returned to France for a year, to Istres, not far from Marseille. That's where I did my sixth grade, which I actually had to repeat because the return from Singapore proved a bit challenging academically.

Then we left for Hong Kong, where I completed all my secondary education.

After high school in Hong Kong, the options were quite limited, which made the situation complex. I passed my baccalaureate in 1993, just before Hong Kong's handover to China in 1997. It's worth noting that Hong Kong had been under British administration for 100 years, and its return to China was approaching.

It was crucial to leave to pursue studies that would be recognized in Europe, rather than risk following a Chinese curriculum. So I made the decision to return to France alone, specifically to Marseille, while my parents remained in Hong Kong.

In Marseille, I began my first year of medical school, which was called P1 at the time. Unfortunately, I failed the first time. I tried again the following year, but failed a second time. After these two failures, I was „out“ as they say, excluded from the French medical system. It was a difficult period and decisive for the rest of my journey.

Did you want to pursue medicine from the start? How did this idea come to you?

Actually, it wasn't an all-consuming passion at first. There was no medical background in my family either. It was more what we call a „calling.“ I felt it was something I might enjoy. It was one of the few options that attracted me at the time.

After failing my first year of medical school twice, I had to consider other paths. I was very involved in sports at the time, particularly rugby. I explored several options: I enrolled in the Faculty of Luminy for biology, and I also considered attending an osteopathy school, a discipline that was starting to develop with many schools opening up.

I ultimately chose Luminy, but after six months, I realized I hated it. The biology undergraduate program wasn't for me at all.

A turning point came during Easter break that year. I had gone back to Hong Kong to visit my parents and decided to try my luck in Italy. Upon returning to France, I loaded up my Peugeot 106 with my belongings and left for Turin to learn Italian. A few months later, I took and passed the entrance exam for Turin Medical School. That's how I finally began my medical studies, in Italy.

Did you already have an idea of which specialty you wanted to pursue while you were in Italy? Did you meet surgeons who guided you in this direction, or did this decision come later?

Actually, this direction became clear quite early on. I couldn't imagine myself in a profession that wasn't hands-on, so surgery emerged as the obvious choice. I was deeply inspired by a surgeon, who has unfortunately passed away now, Dr. Alain Dubau. He was a digestive surgeon practicing in Marseille at Clairval Clinic. Whenever I had a few days off, I would rush to observe him and accompany him in the operating room. He took me under his wing to show me what being a surgeon was really about. This experience opened my eyes to a new and fascinating world.

During my time in Turin, I had the opportunity to observe surgical procedures under unique circumstances. The city's main hospital, Molinette, had a small observation room located above the operating theater at the time. It was like an observatory with a glass dome that offered a bird's-eye view of the procedures. I would go there regularly, and although I didn't understand much of what I was observing - my knowledge being still limited - I would remain fascinated for hours. These observation sessions played a decisive role in my career choice and fueled my passion for surgery.

How does the career path continue in Italy after the six years of medical school?

The system in Italy, at least when I was there, was quite feudal. At the top of the hierarchy was the „ponte“ (the big shot professor), and then everyone else below. I should mention that things have evolved somewhat since then.

After six years of study, you need to complete a one-year internship, a sort of residency year. I chose to do this year in France, specifically in Marseille, my hometown.

Then comes specialization. In Italy, there's an competitive examination to access different specialties. However, I was very worried because of the reputation of the Italian system that I'd heard about. It was said that residents didn't have many opportunities for hands-on practice, which is particularly problematic in a profession like surgery, where quality heavily depends on the number of procedures performed and intensive training.

This limited practical training didn't exist in Italy, at least not as I hoped for. It was around this time that I met my wife, who is Italian from the Aosta Valley. Towards the end of our studies, we decided to leave, to look for opportunities elsewhere. We felt it was necessary for our professional and personal development.

What options were available to you then? Had you already completed your thesis, or is that done afterwards?

Oh yes, I almost forgot about the thesis! It's actually done during the last year, the sixth year of studies. I did mine in pediatric neurosurgery, which was initially my preferred path.

However, I quickly realized that many patients in this field didn't survive, which was quite challenging emotionally. So I redirected my interests, without having a precise idea of my future specialty. I just knew I would go into surgery.

After completing the thesis, my wife and I decided to move to France, specifically to Marseille, to see what would happen there. I found myself in the emergency department of La Conception Hospital, without any real formal structure. I believe this internship year wasn't very regulated at the time.

So I took the initiative to approach Professor Jean, who was then head of emergency services at La Conception. I explained my situation and my need for validated rotations. He offered to let me take the on-call shifts that other residents didn't want to do, with payment for this work. I earned about 250 or 300 euros per night shift, which meant I was working almost exclusively at night.

I must admit that I had limited practical knowledge at that time. My arrival in this department was almost risky, given how limited my medical skills were. Fortunately, there were senior doctors and other experienced practitioners around to supervise me.

I thus spent a year between the emergency department and internal medicine. I had the chance to work with Professor Arley, a remarkable man in internal medicine. In the emergency department, under Professor Jean's direction, I began to familiarize myself with fractures and other trauma cases. This year was an intense learning experience, combining hands-on learning with discovery of the French medical system.

Were you exposed to trauma surgery during that time?

Yes, I had the opportunity to discover fracture management, particularly open fractures, as well as everything that comes through the emergency department. This experience began to spark my interest. I thought it was interesting and could suit me.

However, at this stage, I didn't have a specific plan, as I wasn't integrated into any particular structure or system. That year was simply aimed at validating my internships completed in Italy. Not wanting to return there, I was considering other options like the Middle East or Asia, where my roots and family were, and where I had spent my teenage years.

That's when England emerged as an interesting possibility. Reading magazines and newspapers, I noticed there were many professional opportunities there. I had never been there before. I spotted a job posting in the British Medical Journal (BMJ), applied, and was accepted.

At the time, we already had two daughters, Océane and Manon, which meant we needed to ensure a stable income. I thought this position would cover the entire duration of the residency in England. So we left with everything we had, moving with the whole family. It was only once we arrived that I realized it was actually just a six-month contract.

The English system is quite complex: you have to renew your contract every six months until you truly integrate into the system and enter an official residency program, which, in my case, happened two years later.

It was the time of unified Europe, which meant that as a European, the British accepted me. I was lucky because this opportunity came at just the right time; it was during those years that this system was developing.

For a year or two, I applied every six months. Then, I entered the „Higher Surgical Training“ system, which is a more advanced form of residency. In fact, during „Basic Training,“ you rotate specialties every six months: plastic surgery, neurosurgery, orthopedics, etc. After that, the „Higher Surgical Training“ consists of six years exclusively dedicated to orthopedics and orthopedic trauma. I completed this training in Birmingham.

I worked partly at the Royal Orthopaedic Hospital, then at Coventry and Warwick. In this system, you rotate through different hospitals, but it's very structured: you know when you start and when you'll finish.

Did you meet any people there who left a lasting impression on you?

I met many interesting people. In orthopedics, I realized I had made the right choice: I loved what I was doing. There were professionals from all specialties.

Initially, I was particularly drawn to shoulder and elbow surgery. I had even gone to Annecy to observe Dr. Lafosse's work for a few days. I was trying to find inspiration, to discover what would really appeal to me, but I was always drawn to trauma surgery.

Professor Matthew Costa, who was the director of orthopedic research there was at my center and was an inspiration to me regarding an academic career. He is now a professor at Oxford and publishes numerous randomized trials in trauma surgery. He really gave me the necessary stimulus to build my career, particularly at the academic level. He transmitted to me the desire to publish, to start research early, and to become interested in topics in the field of orthopedic trauma that deserved to be studied.

What were these topics?

For example, about 20 years ago, we became interested in distal tibial fractures. We conducted a multicenter randomized trial comparing the use of nails and plates for this type of fracture.

Then, we worked on many aspects of distal radius fractures. It's important to know that all these studies take time: some are published 10 years after their conception. It was the beginning of a passion, but also of an awareness in orthopedic trauma that everything that is prospective and randomized is complex. There are biases, and over the years, I realized that it wasn't always what I was most passionate about.

How is traumatology perceived in England? Are there surgeons who specialize and dedicate their entire career to this discipline, unlike in France where it's generally young surgeons who practice traumatology before senior surgeons move away from it as soon as possible? Is it different?

Yes, it is indeed different. When I was in England, we were witnessing the beginnings of what are now called Major Trauma Centers (MTCs). There are currently about ten of them throughout the country. The authorities finally understood the necessity of centralizing trauma care. I'm not sure if a similar system exists in France, as I'm not familiar with the situation there.

About fifteen years ago, England began establishing these MTCs, which created a need for specialization. In my time, the concept of a surgeon dedicated exclusively to traumatology didn't exist yet, but the opening of MTCs marked the beginning of this evolution.

The hospital where I worked in Coventry was one of these MTCs, and they were starting to recruit surgeons who would focus solely on traumatology. It was the beginning of a new era. Today, there are many surgeons in England who practice only traumatology.

It was in this context that I began to think about my professional future. The United States appeared to be the ideal destination to pursue my passion for traumatology. There, this specialty was recognized and valued on par with others, including in terms of surgeon compensation, which was practically equivalent to that of other specialties. For me, the next logical step was clear: I needed to go to the United States.

At the end of your six years in England, what options were available to you when considering going to the United States?

At the end of my six years in England, I had several steps to complete. First, I needed to pass the board examination, the FRCS (Fellow of the Royal College of Surgeons). This is a national

examination that must be passed to obtain consultant status in orthopedic surgery. I took and passed this exam.

Then, a fellowship was necessary. This is where quite an amusing and completely fortuitous story comes in. Two years earlier, while I was in my third year in England, I had applied to a program that I thought was based in Nice. My intention was to get a grant to spend five or six weeks in Nice with my wife and daughters during the summer.

In reality, the organization was based in Louisville, Kentucky! When they called to tell me I had received the research funding, I discovered that I had to go to Louisville. That's where I met Professor Seligson, who would become a key person in my career.

During this few-week stay, Professor Seligson offered me a one-year clinical fellowship, to begin two years later. That's how I ended up securing a position at the University of Louisville.

This opportunity was decisive for the continuation of my career path. Professor Seligson became an important mentor, and this fellowship marked a crucial step in my transition to the United States, allowing me to pursue my passion for traumatology in an environment where this specialty was particularly valued.

After living in Birmingham for eight years, making friends and creating an environment, you left suddenly. Didn't you consider staying on as a surgeon in England? Weren't you offered interesting prospects there? Was it as restricted as in France?

Yes, I left Birmingham after spending eight years there. This decision reflects what I consider my deepest „pathology,“ which is also an advantage to some extent: I don't have any particular attachments. This is probably due to having lived in so many different countries.

For me, it was the end of a cycle. I weighed the pros and cons and decided I needed to go to the United States. It's not that I didn't like England. I had a good time there, but then I glimpsed better opportunities elsewhere. I wanted to go to the United States to practice my profession under what I considered extraordinary conditions: having access to substantial research funding and benefiting from an optimal professional environment. All these aspects greatly attracted me.

You're right to raise the question of prospects. In England, the situation was indeed somewhat blocked, as in France. The opportunities available to me weren't very appealing. Deep down, I knew I wanted to try to do better if I could. So I gave myself all the means to achieve that.

I should also mention my wife's crucial role in these decisions. She shares this mindset of being open to change and has always agreed to move with our daughters. We've had them change schools and languages several times, between Italy, Marseille, England, and the United States. We've taken them everywhere. It's our way of life. Originally, my wife was a mathematics teacher. Currently, she's the director of an international high school in Denver.

So, you left for a fellowship in Louisville. How old were you at that time?

I was 35 when I started my fellowship in 2010. It was an intense experience, where you don't count your hours, especially with Dr. Seligson. He's truly passionate, an extraordinary character with an exceptional aura. Today he's 83 and still operating.

At over 70 years old, he was performing about 1,300 surgeries per year, which is extraordinary in the world of orthopedics and traumatology, where the average is around 500 annual surgeries. His pace was intense, with 4 or 5 operating rooms per day that we shared. This led to an extremely steep learning curve for me. This experience immersed me in a totally different universe, where I discovered the reality of life in the United States. Kentucky, a deeply Republican state, embodies many American stereotypes. It was truly a unique immersion...

You must tell us more!

I discovered „gun shows“, these firearms fairs where people sell, give away, and try all sorts of weapons without any regulation. It's the perfect illustration of the ultra-Christian mentality and the founding pillars of certain American states: guns, religion, opposition to abortion. You find all the debate topics that still rage in the United States today.

The expression „Gun and Bible“ well summarizes this culture. Kentucky is part of what's called the „Bible Belt,“ this southeastern region of the United States characterized by strong social and religious conservatism. It was a genuine immersion in deep America, quite different from what one might imagine from Europe.

As a French surgeon with a European background and an English degree, how were you welcomed?

I discovered that the United States is an absolutely fabulous country. In fact, we've since become American citizens, having recently obtained our American passport. Of course, the country has its drawbacks, which we often see reported in our European media, but my experience has been very positive.

Kentucky, where I did my fellowship, is very different from Colorado where we live now, which is much more liberal. But what really struck me was the welcome given to foreigners like myself. I should specify that I'm talking about foreigners who aren't perceived as part of recent economic immigration - unfortunately, I must acknowledge that there are differences in treatment depending on origin or skin color.

For someone like me, who might be seen as a descendant of migration waves from 150 or 200 years ago, the welcome is extraordinary. My first name Cyril doesn't raise eyebrows, neither does my slight accent. My foreign degree is even valued. It's not „Oh, that's strange, you're foreign,“ but rather „What can you bring to us?“ There's always this perspective of success, this desire to improve. As soon as I arrived, I was won over. I thought to myself: „This country is phenomenal, I'll be able to develop myself as I wish.“ And I wasn't wrong. We're truly happy here. This open-mindedness and ability to value diverse backgrounds deeply impressed me and contributed to our decision to settle permanently in the United States.

Seligson speaks some French and appreciates France. Where did he learn French?

Regarding his French learning, I don't have precise details about where and when he learned it. But knowing his intellectual curiosity and his taste for languages, I wouldn't be surprised if he studied it out of personal interest, perhaps during travels or professional exchanges with French-speaking colleagues. His affinity for France and French culture perfectly aligns with his profile as someone who is open to the world and eager for knowledge. Seligson is a brilliant man who speaks several languages. In fact, when I was there, he was learning Mandarin. He's an extremely curious

person, and what really sets him apart from other surgeons or even non-surgeons of his age is his love for exploring new things.

To give you an idea, in 2010 - 15 years ago already - he was exploring all aspects of percutaneous surgery of the pelvis and acetabulum, which was quite innovative at the time. We were using navigation, particularly for placing screws in the acetabulum, which was also new. In the United States, we were beginning to perform anterior approach hip replacements. I know this might bring a smile to French faces, where this technique had been used for 30 years already, but in the United States, it was still quite recent.

This willingness to explore everything new really appealed to me. It demonstrated his curiosity and open-mindedness towards new technologies. That's an aspect of his personality that particularly impressed and inspired me.

What were your prospects at the end of your year in the United States?

At the end of that year, I found myself at another crossroads in my life. I had to choose between staying in the United States or going to Asia - returning to Europe wasn't really an option at that time. However, staying in the United States presented major obstacles, particularly the requirement to retake all American medical examinations. I had some opportunities in the Middle East, but Dr. Seligson offered me a position on-site. So we decided to pursue the American adventure. I chose to take all the required examinations in the United States, which represented a considerable challenge.

These are the basic medical school examinations, covering anatomy, physiology, histology, biochemistry, etc. There are three stages: Step 1, Step 2, and Step 3. Each exam lasts about 16 hours, split over two eight-hour days. It was a full-time job on top of my surgical responsibilities. It was hellish. I consider this the price I had to pay for my youth, which hadn't been very academic.

Today, if an English or French physician wants to follow your path, can they do a residency in the United States and then stay?

Yes, there are ways. With hindsight and my current experience in recruiting foreign surgeons to my department, I've discovered different options. However, these pathways offer less flexibility in terms of mobility. The license obtained is often specific to the teaching hospital, which limits opportunities for change. Nevertheless, it allows for full practice within the institution.

Personally, I didn't want this restrictive situation. That's why I chose to validate all the credentials.

At that time, were you already American or did you become American later?

We only became American three years ago. At the time, we had a J1 visa that required us to stay for a year before returning. However, in the United States, there are always ways to work around the rules. We subsequently obtained a visa that allowed us to be associated with a job in Denver. This enabled us to settle here, and we've now been here for almost 14 years.

Why did you choose Denver?

The choice of Denver was largely thanks to my wife. The opportunity presented itself there, and the process unfolded as follows:

Once I decided to stay in the United States, I began exploring various career opportunities. The Journal of Bone and Joint Surgery (JBJS) regularly publishes job listings in its Career section. The American system is very dynamic in terms of professional mobility, much more so than in most other countries. In academia, everyone is aware of each other's movements.

This mobility is often motivated by financial negotiations. Job openings are listed in JBJS, and that's how I saw a position in Denver. I applied, was offered an interview, and then the position. We came to visit, and my wife made it clear she preferred Denver to Louisville. I naturally accepted.

What particularly attracted me to Denver, and still does today, is the hospital's status as a Level 1 Trauma Center. It's a facility that treats patients regardless of their insurance coverage. It's one of the few „Safety Net Hospitals,“ a teaching hospital that accepts all patients, including many refugees.

These patients often present with more severe traumatic pathologies due to their difficult living conditions. This aspect greatly interested me. I didn't want to be in a purely commercial environment; I wanted to continue my mission of treating vulnerable populations.

Did this position also have an academic component? Were you working with fellows and residents?

Absolutely. It's a teaching hospital where we have a residency program. Currently, we accept seven residents per year for a five-year program, as well as a fellowship. We are one of about a hundred centers in the country offering a trauma fellowship affiliated with Denver Health.

This aspect particularly appealed to me, especially the opportunity to publish extensively. We have numerous databases and have created support to develop an orthopedic trauma research center.

My first project was to increase our international visibility by using my contacts to attract fellows from around the world. We host three or four simultaneously. Although they cannot operate directly, they observe surgeries, participate in consultations, and, most importantly, contribute to our publications. They manage and create these databases that allow us to publish numerous retrospective studies.

Are these fellowships funded? Do you receive university funds for this? How does it work in the United States?

The funding comes from various sources. The official clinical fellow, who is an American resident, is paid by Denver Health. For the others, we rely on philanthropy. The first years were dedicated to fundraising, which allowed us to collect hundreds of thousands of dollars to fund this research.

As for international fellows, they are typically funded by their home countries. We host many Japanese, Chinese, Korean, Indian, and currently Thai fellows, sent by their university centers or governments. For example, the Koreans are funded by Korea. They come to spend between three months and a year with us, with the goal of later occupying leadership positions in their countries. Our teaching isn't limited to surgery. We also introduce them to the systems, trauma care culture, overall organization, and methodology for developing a research center. It's training designed for leaders who, upon returning to their countries, can establish similar structures.

How do you recruit these fellows? Do you conduct interviews or do you have a waiting list? How does it work?

In reality, we have a waiting list. Recruitment primarily happens through contacts within international and national societies.

First, there's the AO (Arbeitsgemeinschaft für Osteosynthesefragen), which you certainly know about in France. It's the Swiss organization in which I'm involved. The AO organizes programs and we're one of their fellowship centers. As such, we host participants every six weeks for stays of the same duration. For these AO fellowships, it's somewhat random: we're simply informed that a doctor from Qatar or elsewhere will be coming.

For the rest, connections are made through scientific societies in the countries of origin who contact us directly. For example, yesterday I received a message from a South African asking if he could come spend three months with us.

Over time, we've hosted our 60th international fellow - we actually just published an article about this. The process has become exponential: you train a South African, and you open the door for other South Africans; you train a Korean, and you create an opportunity for other Koreans.

The fellows communicate with each other and generally appreciate the experience. Denver is a very pleasant city. Right now it's autumn and Colorado is beautiful with its blue skies. It's starting to get cool, but we have skiing in winter and all mountain sports in summer. It's an appropriately sized city, with about a million inhabitants. It's not as enormous as New York, which makes it a nice place. This offers a great experience for our fellows.

Who were the notable local figures when you arrived from Kentucky?

The big name that comes to mind is Wade Smith. In the world of trauma, and particularly in the field of pelvic and tibial plateau fractures, Wade Smith is a major reference. It's largely thanks to him that we are what we are today.

He left Denver Health about 15 years ago, but his influence continues. Wade Smith distinguished himself by exploring practices in Europe. At the time, Denver Health was already known for „pelvic packing,“ a technique used in cases of unstable pelvic fractures with hemodynamic instability.

About 25 years ago, Smith became interested in the practices being used in Germany. That's where he discovered an extraperitoneal packing technique that doesn't require opening the abdomen. He then brought this method to Denver Health.

Until six months ago, we were the only center in the United States performing pelvic packing so regularly and systematically. We recently stopped this practice after demonstrating the associated infectious complications.

Can you explain how you perform the packing?

Packing is a complex technique that usually begins with a small vertical Pfannenstiel incision. This incision is sometimes combined with a laparotomy, depending on the patient's abdominal condition. We use packing when the patient requires more than two units of packed red blood cells for transfusion, has a pelvic fracture (not acetabular), and the E-FAST ultrasound is negative, meaning we don't know the exact source of the bleeding, which is often retroperitoneal.

The procedure involves a vertical incision through the rectus abdominis muscle. We push the bladder to one side or the other, then place three packs in the retroperitoneal space, on both the right and left sides. Then we close the incision.

Generally, we place an external fixator before packing to reduce the pelvic volume. This approach has allowed us to achieve a very low mortality rate due to exsanguination.

However, we found that our overall mortality rate was comparable to centers that didn't perform pelvic packing, around 20-25% for these patients. Our mortality rate from exsanguination was only 2%, but over the years, we identified other complications.

We remove the packs after 24 hours, then proceed with fixation. For pubic symphysis fixation, we observed an infection rate of about 40%. We published these results about a year ago in the Journal of Orthopaedic Trauma. Such an infection rate is not acceptable, especially in a context where total mortality hasn't decreased.

Consequently, we decided to stop the practice of pelvic packing. Currently, we favor embolization and the use of pelvic binders. We no longer place external fixators or perform packing.

What do you mean by „binder“?

It's a kind of enormous splint or wrap. Imagine a large band that closes around the pelvis. It's not the type of belt that was used in clothing in the past.

You could compare it to a kind of sling, but a prefabricated one specifically designed for this medical use. Its role is to tighten and reduce the pelvic volume. It's a crucial tool in modern pelvic trauma management.

To return to your previous question about notable figures, Wade Smith was truly the reference in pelvic trauma when I arrived. He was an extraordinary man, extremely hardworking, who contributed enormously to the field of orthopedics, particularly in the treatment of pelvic and acetabular trauma. His influence on our practice and on the evolution of management techniques has been considerable.

Can you tell us about the composition and organization of your current team?

Today, our team has grown significantly. We've gone from 4 or 5 surgeons initially to 22 currently. We also have 14 Physician Assistants (PAs). Our team includes 35 residents and one fellow. It's important to note that these numbers don't solely relate to trauma surgery. As department chair, I oversee 6 different divisions.

One of our specialties is hand surgery and microsurgery. We are the only center in the state and neighboring states performing replantations, which makes us a reference center in this field. Out of the 22 surgeons, 5 specialize in trauma and handle all the fractures we treat.

We manage between 100 and 130 pelvic fractures annually, plus about 40 acetabular fractures. In total, this represents around 170 to 180 surgical cases of pelvic and acetabular fractures per year.

With your extensive experience and numerous publications, what are the main developments in the management of pelvic fractures compared to 20 years ago, particularly since your fellowship? What are the

major changes for someone who isn't up to date? Are we talking about both pelvis and acetabulum, or just the pelvis?

Let's focus on the pelvis. First, immediate management has evolved considerably. We've moved from packing to embolization, without necessarily resorting to external fixator application. This represents a significant cultural shift.

It's important to understand that the greatest advances are rarely technical, but rather cultural and philosophical. The major changes aren't just about „putting the plate here“ or „the screw there.“ These technical modifications are minimal compared to the evolution in our approach to trauma care.

Here are the main changes I can mention:

The immediate management of patients has become more specific and efficient.

Operating room access has been reimagined. We no longer schedule trauma surgeries after a day of elective surgery, as was previously the case with hip or sports surgeries. Trauma surgery now has priority access to the operating room.

We've understood the importance of having a dedicated team of experts. This is no longer surgery left to beginners. Instead, it should be performed by specialists who, in my opinion, should perform a minimum of 50 procedures per year to achieve the best possible outcomes.

Finally, we've emphasized data collection. We now have a robust database that allows us to evaluate the quality of care we provide to our patients. This enables us to constantly adjust our practices based on our successes and failures.

These changes have transformed our approach to pelvic trauma, significantly improving patient care and outcomes.

Do you favor the percutaneous approach?

We frequently use the percutaneous approach, which is very effective, but there are no absolute rules. When we need to open, we do so. While it's difficult to establish simple rules, generally, the posterior ring is treated percutaneously, whereas the anterior ring often requires an open approach. That said, there are many ways to combine both techniques.

A major change we're observing concerns geriatric pelvic fractures. Twenty years ago, we didn't see as many, but today, it's a daily occurrence. These fractures, often classified as LC1 (lateral compression 1), frequently affect people with osteoporosis. The big question currently is determining when to opt for surgical treatment.

In our practice, we have developed and published tests, particularly stress radiography. The patient lies on their side in radiology, allowing us to evaluate pelvic stability without going to the operating room. This method is more objective than manual examination under anesthesia, which can be influenced by various factors. If displacement exceeds one centimeter, we proceed with fixation. Otherwise, we allow the patient to walk and return home. This represents a significant change in our approach. In 2024, patients should not be treated on bed rest; the goal of treatment is to enable immediate mobilization, especially in elderly patients. There has been considerable evolution in the treatment of pelvic bone metastases - we use intraoperative localization with CT

or 3D fluoroscopy, and using cannulated screws, we insert a thermoablation rod into the tumor lesion and fill it with PMMA before inserting screws into all pelvic bone corridors and acetabulum, somewhat like scaffolding that stabilizes the pelvis and allows immediate patient mobilization. This is generally palliative, of course.

Regarding compartment syndromes, it's a fascinating field because diagnosis isn't binary. It's often too late when signs are obvious, and the situation can evolve rapidly. We emphasize to our residents and young practitioners the importance of pain as the primary indicator. The classic 5 P's (pulselessness, pallor, paresthesia, etc.) are often late signs. We act very early, without necessarily resorting to pressure monitoring, which can be subjective.

An interesting aspect concerns atypical cases of compartment syndrome, such as those occurring after prolonged plastic surgery or in particular positions. This emphasizes the importance of strong clinical suspicion, even in the absence of obvious trauma.

In summary, it's better to open too early than to wait, even though fasciotomy carries risks, particularly of infection. We adapt our incisions based on potential future internal fixation.

What does your typical week look like?

Each day begins at 6:30 AM with a fracture conference, where we review yesterday's cases and upcoming surgeries. On Mondays, we also have a morbidity and mortality meeting. Then, on Mondays, I see my clinic patients, particularly for nonunions or other complications - we receive patients from throughout Colorado and often from neighboring states. On Tuesdays, I'm in the operating room for urgent trauma cases (pelvic and acetabular fractures). Wednesdays and Thursdays are dedicated to my administrative duties as department chief. On Fridays, every other Friday, I operate on scheduled cases: deformities, ankle fractures, tibial pilon fractures, and some hip replacements.

Do you still take call, especially nights and weekends?

We all take call, although I take slightly less than my colleagues. For the past two years, I've only been doing three weekends per year. This reduction in my call schedule is the result of our recruitment philosophy: we deliberately expanded our team to improve work-life balance.

Currently, we have ten practitioners sharing the call schedule, which translates to about five weekend calls per person per year. It's a very manageable rhythm. Moreover, despite some inefficiencies in our hospital system, we generally manage to finish our days by 4:30-5:00 PM at the latest.

This organization allows us to maintain an excellent quality of life, which was one of our main objectives when expanding our team. It's a balance that we all greatly appreciate.

Are you all salaried? How does the compensation system work at your university?

Yes, we are all salaried, which is quite unique and, in my opinion, an excellent system. We are one of the few institutions, along with Mayo Clinic I believe, to operate this way. Most other academic centers have a base salary with incentive bonuses.

This is an aspect of the American healthcare system that I find difficult to understand, as it's managed like a business. In other institutions, the more procedures you perform, such as clavicle

fracture repairs, the more money you make. This can lead to more aggressive surgical intervention in cases where there might not be clear surgical indications.

We don't have this problem because our salaried status allows us to maintain a good quality of life. It also helps us with recruitment. For example, I'm currently recruiting a surgeon who will focus more on research. They will operate less but will receive the same salary, with protected time to produce scientific papers.

How do you manage to make this system efficient? You have a considerable volume of activity to handle and numerous operating rooms. How does it work in practice?

To be completely honest, the system we've put in place over the past few years relies on having a surgical staff slightly larger than our actual needs. Achieving this was a real challenge, and this is precisely my role as department head in its strategic dimension.

The goal was to create an environment allowing us to handle a high volume of patients without exhausting our surgeons. We've achieved this by ensuring that the frequency and intensity of on-call duties remain quite reasonable.

This organization also gives us the opportunity to recruit surgeons who wish to produce scientific papers. Indeed, they realize that their clinical activity is concentrated over three days per week, which leaves them the fourth and fifth days to focus on other aspects of their profession.

The challenge is to encourage them to produce something other than clinical work during this available time. This approach allows us to maintain a balance between sustained surgical activity and research development, while preserving our practitioners' quality of life.

What is the turnover time between two patients for scheduled surgery?

To be frank, our system is currently quite inefficient at this level. We typically perform 3 or 4 cases per operating room at most, regardless of the procedure. Of course, for operations like Dupuytren's or carpal tunnel syndrome, we can do a bit more, especially our hand surgeons.

Currently, our average turnover time is 47 minutes, measured from wheels out to wheels in. If we consider the time between wheels out to knife to skin, we're at 90 minutes.

I'm aware that this is very inefficient, and it's actually our next project. We're going to work on reducing these delays. However, this is one of the drawbacks of a salaried system. If we operated with a bonus system, the entire team would probably be more motivated to increase the number of cases handled. But then again, if only the surgeons received these bonuses and not the nursing staff or other team members, it would create other problems.

Tell us about your wife. She seems to play an important role in your life and has followed you in all your adventures.

My wife is Italian. She has been the pillar of my entire life. We met when we were 23 and got married the same year. Although we met in Turin, we got married in Lus-la-Croix-Haute, in the Drôme region. That's where my grandfather from Marseille built a chalet in the 1950s. We spent all our summers there, and it's where my heart beats most intensely. It was our family rallying point, even when we were returning from Hong Kong or Singapore. We would meet up there with cousins and the whole family.

My wife has always said yes to our crazy adventures. She has been extraordinary, especially with our children who attended schools in different languages. She herself is a teacher and had to adapt professionally. Unlike me, she hadn't had the opportunity to learn English earlier. She comes from a small mountain village called Fénis in the Aosta Valley, with 1,000 inhabitants and 13 bars. So going to countries with different languages was challenging for her, but she adapted remarkably well and learned the necessary languages. We have three daughters, aged 24, 21, and 14. The two eldest are in the United States. The eldest is finishing medical school on the East Coast and wants to specialize in orthopedics. She's currently sending her applications for next year. The second one is in Las Vegas, working in the hospitality sector. As for Chiara, our youngest, she's here with us and has just started high school.

Are you planning to embark on new adventures soon?

There comes a time in life when you start thinking about these things. This summer, during our annual return to France - my parents live in Cassis - I had the opportunity to discuss the future with Jean-Noël Argenson in Marseille over drinks. You know, I always need adventures. We've been here for 15 years, and I'm starting to get itchy feet, even though the department is running very well now.

We definitely have three more years here, as our youngest daughter is still in high school. But as soon as she leaves, in three years, we're considering doing something else. This „something else“ might well be in Southeast Asia. My wife and I would like to embark on an adventure in Thailand or Indonesia, spending a year or two there while continuing to practice. The idea would be to do „nomadic surgery,“ if I may say so. I have quite a few connections there, which would allow me to help develop a fellowship, for example, in pelvic or acetabular surgery.

The goal would be to move around without any financial motivation. We've saved what we wanted, even more, so now it's for our pleasure. We want to try to give back and share knowledge on a more global scale. This is our way of contributing and passing on our experience on a broader scale.

You mentioned your interest in publications and scientific research. Are there any scientific societies that are particularly close to your heart?

Indeed, the OTA (Orthopedic Trauma Association) is probably the most relevant society for my work. It's the most advanced in my field. However, the one closest to my heart is GECO, as it allowed me to meet extraordinary people. By the way, we haven't discussed this, but the person who influenced me the most in this field is Pierre Kehr. Pierre Kehr, a spine surgeon in Strasbourg, offered me unique opportunities very early in my career. While I was still in my second year of residency, I sent him an email by chance, without knowing him. He responded positively and helped me climb the ranks within the European Journal, an excellent publication. Additionally, he invited me every year to GECO, where I established the few connections I have with the French orthopedic world. These meetings took place in Les Arcs, which was also very pleasant.

Tell us about EJOST, since you're now in charge of it.

About 7 or 8 years ago, Pierre was reaching the end of his contract with Springer. With his usual benevolence - he was truly an extraordinary man - he had positioned me to be his successor.

When his contract ended, Springer asked me to take over this journal that he had practically founded with a society from northeastern France, SOTEST if I remember correctly.

So I took over the direction of the journal, but with Springer's orientation aimed at developing it further in the United States. It's quite ironic because although it's called the „European Journal,“ the majority of articles we receive now come from the United States. The current distribution is approximately 50% of articles from the United States, 30% from Europe, and 20% from Asia. I tried to develop this trend to increase the number of articles, which are generally easier to manage in terms of linguistic quality. This strategy has worked well, and today, the journal is doing very well.

The editorial board is currently very American, but I'm going to modify it. I've been asked to include more members from the United Kingdom, Australia, Canada, and France. If anyone is interested, I would very much like to include them. My heart remains French, but I have few connections with France, which is why this interview is very important to me.

Six years ago, I welcomed my first international fellow from France, Guillaume David from Angers, who was exceptional. He had this curiosity to come to the United States, whereas usually, the French go to the Mayo Clinic, for example. I've always been very interested in developing these connections with France and welcoming more French doctors to my center. There's a lot to share with young French doctors who wish to come here to discover a different way of working.